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(54) DYE THERMAL TRANSFER RECEIVING SHEET

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a dye thermal transfer receiving sheet in which an image receiving sheet portion is separatably adhered to a separater portion and in which the image receiving sheet portion can be separated from the separater portion after an image is thermally transferred for attachment to various things.

SOLUTION: A dye thermal transfer receiving sheet comprises a separater portion having a separating sheet base and a release agent layer formed over one side of the separating sheet base and arm image receiving sheet portion having a receiving sheet base, a dye image receiving layer formed over one side of the image receiving sheet portion and an adhesive layer on time other side thereof, wherein the adhesive layer of the image receiving sheet portion and the release agent layer of the separater portion are separatably overlaid on each other in such a manner as confront each other. The retaining force of the adhesive layer is such that there is caused no deviation after a lapse of 24 hours, and the compression modulus of elastisity of the separating sheet base is 1800kg/cm2 or less for a thickness of 100μm and the sum of the compression modulus of elastisity of the receiving sheet base for a thickness of 100μm and the compression modulus of elastisity of the separating sheet base for a thickness of 100μm is 2,800kg/cm2 or less.

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CLAIMS

[Claim(s)]
[Claim 1] The separator section which has a sheet base material for exfoliation, and the remover layer formed on the whole surface, and an acceptance sheet base material, It becomes the color image acceptance layer formed on the whole surface from the image acceptance sheet section which is alike on the other hand and has a binder layer. In the color hot printing acceptance sheet the laminating of the exfoliation of was made possible so that the binder layer of said image acceptance sheet section and the remover layer of the separator section might counter A gap does not arise [the holding power of a binder layer] after 24-hour progress. The compressibility per 100 micrometers in thickness of the sheet base material for exfoliation 1800kg/cm2 or less, The color hot printing acceptance sheet characterized by the sum of the compressibility per 100 micrometers in thickness of an acceptance sheet base material and the compressibility per 100 micrometers in thickness of the sheet base material for exfoliation being 2800kg/cm2 or less.
[Claim 2] The color hot printing acceptance sheet according to claim 1 whose exfoliation force of the acceptance sheet section and the separator section is 2-10g / 20mm.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to a color hot printing acceptance sheet. Furthermore, it is adhering it is detailed and possible [this invention / the image acceptance sheet section] for exfoliation in the separator section, and is related with the color hot printing acceptance sheet which exfoliates from the separator section and can stick an image acceptance sheet part on various things after an image imprint.
[0002]
[Description of the Prior Art] In recent years, the thermal printer and the color thermal transfer printer which can print a clear full color image especially have attracted attention. With the heat to which the acceptance layer which contains the color dyeing property resin of an acceptance sheet in a color ink sheet is supplied from superposition, a thermal head, etc., only predetermined concentration imprints the color of the necessary part of a color layer on an acceptance layer, and a color thermal transfer printer forms an image. An ink sheet consists of a color of yellow, a Magenta and three colors of cyanogen, or four colors that added black to this. A full color image is obtained by repeating the color of each color of an ink sheet in order on an acceptance sheet, and imprinting it on it. Thus, there is an acceptance sheet of the label type which can stick the sheet after the acquired imprint record on various goods freely.
[0003] A label type acceptance sheet is the configuration of having a remover layer, a binder layer, an acceptance sheet base material, and an acceptance layer on the sheet base material for exfoliation. It can exfoliate between the separator section which consists of a sheet base material / a remover layer for exfoliation, and the acceptance sheet section which consists of a binder layer / an acceptance sheet base material / an acceptance layer, and the acceptance sheet section can be stuck on various goods. The quality for which a such label type acceptance sheet is asked has high image concentration, and is good imprint record without generating of the curl by the heat at the time of an imprint being performed, and being able to exfoliate mutually the acceptance sheet section by which image formation's was carried out, and the exfoliation sheet section easily and correctly after transfer picture record moreover. There are some which could exfoliate between the separator section which becomes a technique about a label type acceptance sheet from the sheet base material / remover layer for exfoliation indicated by JP,64-82988,A, and the acceptance sheet section which consists of the above-mentioned binder layer / sheet base material / acceptance layer, and performed half cutting processing to the acceptance sheet section and the separator section.
[0004]
[Problem(s) to be Solved by the Invention] In order to make such a label type acceptance sheet into a necessary dimension suitably, cutting processing of a slitting machine, guillotine, a die cut, etc. is performed. Moreover, cut processing of half cutting processing etc. is also performed. However, since a binder overflows an end face in this case, the binder adhered to the cutting cutting edge and cutting degradation, print side dirt, etc. have happened. Furthermore, the sheets after cutting are stretched and attached, while several sheets had lapped at the time of a print, paper may be fed, and it had become a problem.
[0005]
[Means for Solving the Problem] this invention persons came to complete header this invention for a technical problem being solved by specifying the compressibility of the holding power of a binder, the acceptance sheet section, and a separator section base material, as a result of inquiring wholeheartedly that the above-mentioned technical problem should be solved.
[0006] In the color hot printing acceptance sheet which is characterized by this invention possessing the following and the laminating of the exfoliation of was made possible so that it might consist of the image acceptance sheet section and the binder layer of said image acceptance sheet section and the remover layer of the separator section might counter A

gap does not arise [the holding power of a binder layer] after 24-hour progress. The compressibility per 100 micrometers in thickness of the sheet base material for exfoliation 1800kg/cm2 or less, The color hot printing acceptance sheet characterized by the sum of the compressibility per 100 micrometers in thickness of an acceptance sheet base material and the compressibility per 100 micrometers in thickness of the sheet base material for exfoliation being 2800kg/cm2 or less. The sheet base material for exfoliation The separator section which has the remover layer formed on the whole surface, an acceptance sheet base material The color image acceptance layer formed on the whole surface on the other hand -- alike -- a binder layer

[0007]

[Embodiment of the Invention] It is the description that the compressibility per 100 micrometers in thickness of an acceptance sheet base material and an exfoliation sheet base material satisfies the following conditions using that in which the holding power of a binder layer is after 24-hour neglect, and this invention does not have a gap in a label type color hot printing acceptance sheet, and the thing which is after 48-hour neglect preferably and is worn and which is not.

(1) For the compressibility of the sheet base material for exfoliation, the sum of the compressibility of a 1800kg/cm2or less (2) acceptance sheet base material and the sheet base material for exfoliation is 2800kg/cm2 or less. [0008] It becomes the acceptance sheet which sheets stick, there is no ** and the performance traverse within a recording device is also satisfactory even if a binder does not soil a flash cutting cutting edge at the time of a cut and it piles up a sheet by satisfying such all conditions, and can exfoliate and can stick the acceptance sheet section easily [in case it is attachment use].

[0009] The measuring method of holding power is JIS. Z Although it is an approach according to 0237, especially in this invention, it specifies having measured the existence of the gap after 24-hour neglect by the 40-degree-C65% ambient atmosphere and 1kg load. Compressibility used the straw graph M2 (product made from an Oriental machine) for the compressor, and stress asked for it from the inclination of the range of 10kg/cm2 or more in the stress-strain diagram curve when compressing until the maximum compressive force was set to 100kg by 2 rate of strain 1 mm/min and the compression cross section of 2.55cm. When the thickness of a base material was not 100 micrometers because of a comparison, it converted into the compressibility per 100 micrometers.

[0010] As an acceptance sheet base material of the color hot printing acceptance sheet section used for this invention, although based also on combination with the sheet base material for exfoliation, the film of the laminated paper which laminated resin, such as paper bases, such as coat paper, art paper, and paper of fine quality, and polyethylene, in the paper base, polyester, nylon, and polyolefine (for example, polypropylene) etc. is illustrated. Moreover, although there is no limitation especially in the pulp for using foaming paper and building this sheet-like base material in paper of fine quality, the synthetic pulp which used non-wood pulp, such as wood pulp, such as chemical pulp of a needle-leaf tree or a broad-leaved tree and mechanical pulp, recycled pulp, hemp, and cotton, polyethylene, polypropylene, etc. as the raw material, for example can be used, and you may use it combining these. Various kinds of fiber other than the above-mentioned pulp, such as inorganic fibers, such as organic fiber, such as an acrylic fiber, a rayon fiber, phenol fiber, a polyamide fiber, and polyester fiber, a glass fiber, a carbon fiber, and an alumina fiber, can be mixed. However, the conditions of a sheet which it is better to blend pulp 50% of the weight or more, and were excellent by this, and reinforcement can be obtained, considering the viewpoint of maintaining paper-making nature on practically possible level.

[0011] The separator section used for this invention consists of a sheet base material for exfoliation, and a remover layer, it is synthetic papers, such as the poly lamination stencil paper which laminated polyethylene mold resin etc. in one side at least, polyolefine, and polyethylene terephthalate, and the compressibility per 100 micrometers in thickness can use a thing 1800kg/cm2 or less for the stencil paper which uses cellulose pulp as a principal component as a sheet base material for exfoliation. In order to adjust compressibility, in the case of a polylaminated paper, the class of adjustment by the pressure of the freeness of cellulose pulp, combination of a softening agent, and the wet press of a paper-making process etc. and lamination resin, an additive, etc. can adjust. In the case of a synthetic paper, installation of the class of resin, the mixing ratio of two or more resin, an additive, the rate of film extension and degree of crystallinity, and the foaming structure to a film etc. can adjust.

[0012] as combination of an acceptance sheet base material and an exfoliation sheet base material, the sum of the compressibility per 100 micrometers in thickness of an acceptance sheet base material and the compressibility per 100 micrometers in thickness of the sheet base material for exfoliation is 2800kg/cm2 or less -- various combination, such as an inorganic pigment content polypropylene synthetic paper, is in an acceptance sheet base material at Foaming PET and the sheet base material for exfoliation that what is necessary is just to carry out thing satisfaction.

[0013] coaters with the well-known coating approach to the sheet base material for exfoliation of a remover, such as a

gravure coating machine and a bar coating machine, -- it can carry out -- the amount of coating in this case -- solid content -- 0.3 - 1.5 g/m2 -- about two 0.5 - 1.2 g/m is suitable preferably. Incidentally, in less than two 0.3 g/m, when the variation in detachability ability is large and exceeds 1.5 g/m2, it is scarce from the field of economical efficiency to practicality.

[0014] As a binder used for this invention, well-known binders, such as acrylic, a synthetic-rubber system, a natural rubber system, and a silicone system, can be used. In a binder, in order to adjust the exfoliation force and holding power, a cross linking agent (curing agent), a bulking agent, etc. can be added suitably. Especially the binder layer that combined the cross linking agent and the bulking agent using the acrylic binder is easy to adjust in the exfoliation force or holding power, and especially since the adhesion of a binder and a base material is excellent when the base materials of an acceptance sheet are a film and a synthetic paper, it is desirable.

[0015] the formation approach of a binder layer -- carrying out -- after carrying out coating of the binder to the remover layer front face of the separator section and drying on it, it may stick on the rear face of the acceptance sheet which has a television layer for this in a front-face side, a binder may be stuck on the field in which the acceptance layer of an acceptance sheet is not prepared, and the remover layer front face of the separator section may be stuck on this after coating desiccation. The thing which the holding power of a binder layer is after 24-hour neglect, and a gap does not produce in this and which is not, and the thing which is after 48-hour neglect preferably and a gap does not produce and which is not are used.

[0016] Furthermore, when the exfoliation force of the acceptance sheet section and the separator section measures at the exfoliation speed for 90mm/, it is [that what is necessary is just the coverage which is set to 2-10g / 20mm] desirable [a binder layer] to be formed by the coverage (solid content) of 10-30g/m2. In coverage which the adhesion effectiveness is scarce and exceeds 30 g/m2 in less than two 10 g/m, it is scarce from the field of economical efficiency to need. When the exfoliation force of the acceptance sheet section and the separator section measures at the exfoliation speed for 90mm/, since the exfoliation force does not separate within 2g / 20mm or more, and a printer, it is good, but since the exfoliation force is too heavy when it exceeds 15g / 20mm, the exfoliation after a print becomes difficult. In addition, the exfoliation force in here is defined as the load (g/20mm) which cuts a color hot printing acceptance sheet to 20mm width of face, and it is a fixed rate from the separator section, and is applied in it when the acceptance sheet section is pulled and removed at the hauling include angle of 180 degrees.

[0017] Moreover, since generating of the transit trouble by static electricity is prevented when an acceptance sheet runs in a printer, the above antistatic agent can be further applied to the front face and/or rear face of a color hot printing acceptance sheet at least.

[0018] Resin with sufficient compatibility with the dyeing property color from an ink ribbon is preferably used for the image acceptance layer of this invention, and polyester resin, polycarbonate resin, a vinyl chloride copolymer, and a cellulosic are illustrated. It is desirable to add the cross linking agent, a slipping agent, a remover, etc. if needed in the case of a print, in order to prevent welding with the ink ribbon by heating of a thermal head. Moreover, fluorescent dye, a plasticizer, an antioxidant, a pigment, an ultraviolet ray absorbent, etc. may be added in an acceptance layer if needed. It mixes with the principal component of an acceptance layer, coating of these additives may be carried out, and coating may be carried out on an acceptance layer and/or to the bottom as another enveloping layer. coating machines with the well-known acceptance layer of this invention, such as a bar coating machine, a gravure coating machine, a comma coating machine, a blade coating machine, and an air knife coater, -- using -- a conventional method -- following -- the coating liquid for acceptance stratification -- coating -- it can dry and form.

[0019]

[Example] Although the following example explains this invention to a detail, the range of this invention is not limited to these. In addition, in an example, unless it refuses especially, all of "%" and the "section" show "% of the weight" and the "weight section."

[0020] the film (the Toray Industries make, trade name:50E63S) with a thickness of 50 micrometers which uses example 1 [creation of the acceptance sheet section] polyethylene terephthalate as a principal component, and has foaming structure -- as the base material for acceptance sheets -- using -- the field top of one of these -- the color image acceptance stratification sake -- the coating of the following presentation -- solid content 8 g/m2 -- comparatively -- coming out -- a die coating method -- coating -- it dried.

"The coating for color image acceptance stratification"

** Part Weight section Polyester resin (trade name: made in [Toyobo] Byron 200) The 100 sections Silicone resin (trade name: KF393, product made from Shin-etsu silicon) The three sections Isocyanate (trade name: D-140 N bamboo NETO, Takeda Chemical make) The five sections Toluene The 300 sections [0021] solid content coverage serves as 16 g/m2 in the coating of the following presentation on the opposite side of said acceptance sheet base

material -- as -- a bar coating method -- coating -- it dried, the binder layer was formed and the acceptance sheet section was obtained.
"The coating for binder layers"
** Part Weight section The acrylic binder (trade name-E-115E, product made from Japanese carbide) 100 section ISOSHIA curing agent (trade name: CK-101, product made from Japanese carbide) The one section Epoxy curing agent (trade name: CK-202, product made from Japanese carbide) This was diluted with ethyl acetate to 20% the 3 sections.
[0022] Use [creation of the separator section] polyolefine as a principal component, and let a film (the Toray Industries make, a trade name: 100E60) with a thickness of 100 micrometers with foaming structure be a sheet base material for exfoliation. it uses and becomes 0.6g/m2 by solid content about a silicon system remover (the Shin-Etsu Chemical make, trade name:KS-830) in the field of one of these -- as -- the gravure coating method -- coating -- it dries, a remover layer is formed and it becomes 1 g/m2 by solid content about the following coating as an antistatic layer further at the half-dignity of a silicon side -- as -- a bar coating method -- coating -- it dried and the separator section was produced.
"The coating for antistatic layers"
** Part weight section acrylic resin (trade name: -- Rikabond SAR-615A --) epoxy curing agent made from ******-izing The 100 sections (trade name: -- Rikabond SAR-615B --) Product made from ******-izing The five sections The electric conduction agent (trade name: ST2000 H, Mitsubishi oil formation) 75 section Silica pigment (trade name-78A, product made from the Mizusawa chemistry) The 30 sections [0023] [creation of an acceptance sheet] -- the color hot printing acceptance sheet was obtained by piling up and sticking the remover layer of this separator section, and the binder layer of the acceptance sheet section.
[0024] The film (the Toyobo make, a trade name: G2312) with a thickness of 100 micrometers which uses polyethylene terephthalate as a principal component and has foaming structure in the sheet base material for example 2 exfoliation was used. The color hot printing acceptance sheet was obtained like the example 1 except it.
[0025] The film (the Oji-Yuka Synthetic Paper make, a trade name: FPG110) with a thickness of 110 micrometers which uses polyolefine as a principal component and contains an inorganic pigment in the sheet base material for example 3 exfoliation about 30% was used. The color hot printing acceptance sheet was obtained like the example 1 except it.
[0026] The film (the Unitika make, trade name:EMBLET T-100) with a thickness of 100 micrometers which uses polyethylene terephthalate as a principal component was used for the sheet base material for example of comparison 1 exfoliation. The color hot printing acceptance sheet was obtained like the example 1 except it.
[0027] The color hot printing acceptance sheet was obtained like the example 2 except having used the following coating as a coating for example of comparison 2 binder layers.
"The coating for binder layers"
** Part Weight section The acrylic binder (trade name-E-115E, product made from Japanese carbide) 100 section ISOSHIA curing agent (trade name: CK-101, product made from Japanese carbide) This was diluted with ethyl acetate to 20% the 0.5 sections.
[0028] The color hot printing acceptance sheet was obtained like the example 3 except having used the following coating as a coating for example of comparison 3 binder layers.
"The coating for binder layers"
** Part Weight section The acrylic binder (trade name-E-115E, product made from Japanese carbide) 100 section ISOSHIA curing agent (trade name: CK-101, product made from Japanese carbide) This was diluted with ethyl acetate to 20% the 0.5 sections.
[0029] The film (the Toyobo make, a trade name: G1212) with a thickness of 100 micrometers which uses polyethylene terephthalate as a principal component and has foaming structure in the base material for example of comparison 4 acceptance sheets was used. The color hot printing acceptance sheet was obtained like the example 3 except it.
[0030] The following evaluation was performed about the obtained acceptance sheet. Moreover, the holding power of each binder layer and the compressibility of a base material are measured and combined, and are shown in Table 1.
[0031] The evaluation "dirt of cutting cutting edge" above-mentioned acceptance sheet was cut using the 20-sheet pile and the Guillotine cutter, and the dirt of a cutting edge was evaluated in the two following steps.
O : with no dirt of a cutting edge.
x: Adhesives remained in the cutting edge and there was stickiness.
[0032] The above-mentioned acceptance sheet "with the beam of a sheet" was cut using the 20-sheet pile and the

Guillotine cutter, and the situation with a beam of the acceptance sheet after cutting was evaluated in the two following steps.
O : stretch, and nothing [attach and].
x: A **** with a beam.
[0033] The 50 "performance-traverse test" above-mentioned acceptance sheets were printed by black solid using the sublimation video printer (trade name: UP-1800, Sony make), and performance traverse was evaluated to the two following steps.
O : poor performance traverse is nothing.
x: Paper was fed, with the 2-3 sheet lapped. Paper was stuck for the printer at the time of feeding.
[0034] "Holding power of a binder layer" JIS Z According to 0237, it carried out the condition after 24-hour neglect by the 40-degree-C65% ambient atmosphere and 1kg load, and the following criteria estimated.
O :-gap-less x : there is a gap. [0035] The straw graph M2 (product made from an Oriental machine) was used for "compressibility" compressor, and stress asked from the inclination of the range of 10kg/cm2 or more in the stress-strain diagram curve when compressing until the maximum compressive force was set to 100kg by 2 rate of strain 1 mm/min and the compression cross section of 2.55cm. When the thickness of a base material was not 100 micrometers, it converted into the compressibility per 100 micrometers.
[0036]
[Table 1]

	保持力	圧縮弾性率（kg／cm²）		断裁刃の汚れ	シート貼り付き	走行性テスト
		剥離用シート基材	受容シート基材と剥離用シート基材の和			
実施例1	○	700	1400	○	○	○
実施例2	○	1600	2300	○	○	○
実施例3	○	500	1200	○	○	○
比較例1	○	2000	2700	×	×	×
比較例2	×	1600	2300	×	×	○
比較例3	×	500	1200	×	×	○
比較例4	○	500	3000	×	×	×

[0037]
[Effect of the Invention] Since the acceptance sheet of this invention can lose with [of the dirt of the cutting edge at the time of a cut, poor transit, and acceptance sheets] a beam etc., the practical use value of the color hot printing acceptance sheet of this invention is high as an acceptance sheet for labels.

[Translation done.]